Station Survey Page

Diagnostic application

Dec 28, 1989

Introduction

This application page was developed to assist in keeping track of a collection of Local Station network nodes. Some key system configuration parameters and statistics are collected and displayed for any given node, or they may be listed to the serial port for a selected set of network nodes.

Display layout

```
0         Q STATION SURVEY  12/22/89 1047
1         *SCAN  *EDIT  *LIST TO NODE<08>
2         NODE<2A>  VERSION=12/11/89  PSOS
3         CPU=68020 BOARD=133  CY=66 SW=00
4         CHANS=1024 BITS=2048 UP= 1.01  D
5         REQUESTS=4   MXFREE=4000 CERR=00
6         PAGE=2 24MW BEAM STICK  FFF26000
7         <KLYSTRON PFN    >
8
```

Enter the node number on line 2 and interrupt to get this display for any node. The above example shows the system parameters for node 2A at this writing.

The version date of the executing system is shown along with the PSOS tag if the system uses the pSOS kernel. The cpu chip# and cpu board# are shown on the next line. If the system is running in prom, an upper-case P is shown immediately after the cpu board#. On the same line are also shown the cycle length in milliseconds and the reading of the option switches (in hexadecimal) from the station's Crate Utility Board.

The number of analog channels, the number of binary bits, and the amount of time since the node was last reset (in days) is shown on line 4. The number of current data requests that are active is given, where only locally initiated requests and data server requests are counted. (Ordinary network requests are not included here; including them would be a enhancement to the program.)

The maximum contiguous block of free memory is shown next, limited to $4000 bytes for pSOS systems. This is because the dynamic memory for such systems is more than 64K bytes, and the system variable that holds that information is only a word. It would be better if it were a longword; this is another possible enhancement. Also, the pSOS systems don't provide a system call to get that maximum contiguous value directly; the system code tries to allocate successively smaller (by halves) blocks of memory in order to get an estimate of it. Some applications reference this word to gauge whether they should hold up sending output to the serial print queue, for example, since dynamic memory must be allocated for each line of text that is spooled for printing.

The console serial I/O error counter is shown next. The local console is interrogated every cycle to get the latest reading of the buttons, keyboard and

The current display page# and page title is shown on line 6, followed by the entry point address of the application that is currently running. The above example shows an entry point that is in prom memory on the cpu board. On line 7 is an editable field that describes the location / use of that station. Enter a 16-character description and interrupt here to change it. (It is stored internally in the place where the title would be kept for page#0. It isn't used when page#0 is displayed, since the index page's title is fixed.) The description was implemented for the use of this survey application.

Selected stations

Three operations that refer to a selected set of nodes are supported by line 1 on the page. They are denoted by the keywords SCAN, EDIT and LIST.

To prepare the list of selected nodes for use by the SCAN and LIST options, interrupt under *EDIT. The word EDIT will change to SAVE, and the last 6 lines may look like this example:

```
 9          02 03 04 05 06 07 08 09 0A .. 0D
10          12 .. 16 .. 19 .. 21 .. 23 .. 24
11          30 31 .. .. 34 35 .. 37 .. .. ..
12          .. 46 47 .. 4A 4B .. .. .. .. ..
13          .. 54 55 56 57 .. 5A 5B 5C 5E 5F
14          .. .. .. .. .. .. .. .. 73
```

This is the editable list of nodes that are used by the SCAN and LIST options. While in this mode, with the SAVE word shown in inverse video, enter any node#s in any of the available fields. To remove a node from the list, enter a double period. Then interrupt anywhere in the area of those 6 lines (or under the SAVE word) to save the updated list of nodes. The node list will immediately be blanked, and the SAVE word will be changed to the EDIT prompt again.

The SCAN option is used to automatically sequence through the selected node list and display the system parameters that are collected from each node. As it does this, the node# is displayed in the 6-line area used for the node list. If the station does not respond, its node# is shown in inverse video. This mode is typically used to find out what nodes (of the selected set) are "up."

A special use of the SCAN option is to collect a list of all the nodes which are "up" to initialize the selected node list. To do this, interrupt under SCAN after having interrupted under EDIT. The set of on-line nodes will appear quickly. To *save* this list, interrupt under the SAVE word. To *prevent* overwriting the selected node list, exit the page.

The LIST option collects the same data as the SCAN option, but it prepares it for listing to the serial port of the local station (or of any other station on the network). The list may then be examined at leisure. The format of the listing produced might look like this:

```
STATION SURVEY  12/22/89 1106 *
Node Version p  Chip Board Cy Sw Chan Bits  Up-d Rq Free System_title
 03 03/07/88   68000  101P 80 40  255  248  0     0 2520 LINAC ANNEX TEST
 04 03/07/88   68000  110P 80 1C  255  248  0     0 1DA0 WH1 MUON TEST
 05 07/05/89   68000  101  80 00  255  248  57.1  2 3EA8 XGAL TEST
 08 12/14/89 p 68020  133  80 14  255  248  0.82  2 4000 LINAC SUN ROOM
 0D 09/15/89 p 68020  133  80 40  255  248  7.83  4 4000 D0 MCH3
 12 09/06/89   68020  133  66 00  255  248  35    4 3DA8 LINAC TEST BENCH
 16 03/07/88   68000  110P 66 00  255  248  0     0 12A0 MCR STATION
 21 07/05/89   68020  133  80 40  512  768  65    0 3F70 D0 MCH2
 23 10/26/89 p 68020  133  66 1C 1024 2048  13.9 35 4000 LINAC KLYSTRON
 2A 12/11/89 p 68020  133  66 00 1024 2048  1.06  4 4000 KLYSTRON PFN
 30 07/05/89   68020  133  80 00 1536 2048  10.9  4 3DA8 D0 MUON TEST
 31 07/05/89   68020  133  80 00  255  248  58.9  3 3E30 D0 FCH1
 34 08/06/89 p 68020  133  80 40 1024 2048  16.9  0 4000 IB4 BLAZEY TEMPS
 35 09/06/89 p 68020  133  80 40 1024 2048  9.02  0 4000 D0 MUON MCH R305
 37 09/22/89 p 68020  133P 80 40 1024 2048  0.79  0 4000 NWA TEST CELL
 46 08/18/89 p 68020  133P 80 0C 1024 2048  2.07  0 4000 D0 MUON MCH R305
 47 10/26/89 p 68020  133  80 1C 1536 2048  38.9  4 4000 D0 MUON MCH R305
```

The lower-case p after the system version date indicates the use of the pSOS kernel. The upper-case P after the cpu board# means the system is executing in prom.

***Not* an unassuming application**

This application presumes to know more about the memory layout of the system software than most applications would. Because of this, it may have to be updated or enhanced along with certain system modifications.